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A STUDY OF THE MORTUARY STATISTICS OF PHILADELPHIA.

COMPRISING AN ANALYSIS AND CLASSIFICATION OF THE CAUSES OF
DEATH GIVEN IN THE HEALTH OFFICER'S ANNUAL REPORT FOR
1887, COMPARED WITH THE SAME REPORTS FOR 1876 AND
1886, AND WITH THE MORTUARY STATISTICS OF
THE UNITED STATES AS RETURNED IN
THE CENSUS OF 1880.

WITH SOME COMMENTS ON THESE REPORTS, AND SUGGESTIONS RESPECT-
ING THE FUTURE TABULATIONS AND PUBLICATIONS
OF THE MORTUARY STATISTICS.

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[Read January 9, 1889.]

THE memorable injunction of Cullen was to "obviate the tendency to death." This is conspicuous as a beacon light in the history of medicine and of therapeutics. Cullen's precept receives constant application. The use of the ligature or tourniquet to arrest hemorrhage, the several urgent surgical operations, the use of stimulants in low febrile conditions, the application of cold and antipyretics in sun-stroke and hyperpyrexia, and the great advances in modern antiseptic surgery and therapeutics, all have the objective point of Cullen's injunction. As the ultimate tendency of disease, if not removed, is to death, the use of all therapeutic agents must be, either directly or indirectly, to obviate the tendency to death.

The numerous diseases to which the human family are subject have certain well-marked tendencies to death. This is slight in some affections, almost invariable in others, and some diseases, slight in themselves, are prone to complicating affections of fatal disposition. Studies are made of certain diseases from time to time, from limited numbers of cases, and these serve to fix the data respecting the prevalence and mortality of these diseases.



There is no practicable way of ascertaining the number of cases of disease occurring in a city, community, or country. It is possible, however, to collect the statistics relating to deaths and the causes of death, with other valuable data; and from large numbers it is possible to show the proportion in which death occurs from one cause as compared with another, or with the whole number of deaths. As these relative proportions bear a certain relation to the living population as well, comparisons are interesting and valuable. The physician must understand this tendency to death from different causes and diseases, that he may the better be able to perform his duty to his patients and to himself.

At the outset of this inquiry, the pertinent question presents itself, *What are the causes of death?* The general idea of cause is that without which another thing called the effect cannot be; and in medical literature, and in referring to the cause of death, we recognize three kinds—the immediate, the complicating, and the remote.

(1) The *immediate*, or proximate, cause of death in some instances is the result of accident, or the sudden and unexpected onset of grave symptoms. In other cases it is referred erroneously to some pathological lesion which is an accompaniment of death itself.

(2) The *complicating*, or concurring, cause of death is usually some coexisting or complicating disease of recent origin.

(3) The *remote*, or primary, cause of death is generally some latent disorder or physical condition which predisposes to disease in general, or to some particular affection; or it may sometimes be referred to some of the specific general diseases.

However, in a classification which admits but one cause of death we must consider the *determining cause*, which may be of either of these kinds, and would depend upon the clinical history of a given case. This is, practically, the cause without which a death would not have occurred, and it should be referred to some recognized clinical disease or accidental cause, though the relative causes may be merely important symptoms, or may even belong outside of clinical nomenclature. Examples of these different causes are here given, with the determining cause in each instance in italics.

Immediate.	Complicating.	Remote.
Hemorrhage from bowels.	Peritonitis.	<i>Typhoid fever.</i>
Convulsions.	<i>Catarrhal pneumonia.</i>	Whooping-cough.
<i>Apoplexy.</i>	Hypertrophy of heart.	Bright's disease.

The blank physician's certificate for the return of a death in this city requires only the "cause of death," and a careless physician might assign any of the causes given. The blanks used in the collection of the mortality statistics of the last census asked for the "cause or causes of death." Many life insurance companies, in their certificates, require all of these causes to be given.

Death is the termination of life, an essential and physical phenomenon, and in whatever way accomplished, whether by natural mode or by violence, the event itself, being the result of preceding causes, is beyond our control. Hence, the causes of death must not be confounded with the modes of dying and the attendant lesions, which naturally are the result of disease.

In the simplest expression, death occurs in two distinct modes through each—the heart and the lungs. *Cardiac death* occurs from (1) asthenia, debility, or slow exhaustion; or from (2) syncope, or sudden failure of the heart's action. *Pulmonary death* occurs from (1) apnœa or asphyxia, access of air being shut off from the lungs; or from (2) coma, or indirect apnœa, through extinction of the brain functions from apoplexy, narcotic poisons, etc. Death may also occur through a combination of these modes. It is to be regretted that deaths are attributed sometimes to these various modes of dying and to the attendant pathological conditions, which are but features of the dissolution itself.

These thoughts are suggested by an examination of the Health Officer's Annual Report for 1887, which has just made its appearance. The study I have made is the more seasonable and important because the medical profession throughout the country will, no doubt, in the course of a few months, be requested to coöperate with the government in the collection of the mortality and vital statistics for the next census. Every physician should take a personal pride in having this report as full and accurate as it is possible to make it.

From a careful examination of the tables given in the Health Officer's Annual Reports it is apparent that the causes of death are clearly stated in the vast majority of cases, and embrace a very large classification. But there are some causes given which are only symptoms; others are mere general statements, as disease of the liver, etc.; some refer to the mode of dying, and are not causes at all; and others express mere conjectures, so crude and irrelative as to diagnosis, that it is little wonder that the patients of physicians who give such certificates should die, for without a definite diagnosis treatment is of little avail. I desire to draw particular attention to this matter, to

apply counter-irritation, as it were, to this unsightly blemish on the face of the mortality statistics, that the defect may be remedied or abolished.

In compiling these tables the Registrar has evidently reduced convertible terms, such as pneumonia and pleurisy, to inflammation of the lungs and of the pleura, but his lack of medical training is shown where he has not applied the rule throughout the list. For example, each of the following has a separate classification in the same table: abscess of kidneys and renal abscess, catarrhal fever and influenza, hypertrophy and enlargement of the heart, icterus and jaundice, fracture of the femur and of the thigh, perforation of the bowels and of the intestines, septicæmia and blood-poisoning, etc.

Excluding all of this class of synonymous terms, many of which are objectionable as being neither medical nor scientific, I will now present a few of the hopeless guesses and indefinite expressions given as the causes of death: chill, colic, general congestion, cramps, nervous fever, fever, neurosis, visceral neuralgia, cirrhosis, sclerosis, coma, sarcoma, disease of brain, liver, etc., heart-clot, hectic fever, purpura hemiplegica, syncope, tympanitis, masturbation, boils, indigestion, hepaticized lungs, indurated lungs, etc. All such indefinite terms are discreditable and a reproach to the profession. Many of them, no doubt, are to be attributed to irregular practitioners. I would even take exception to the use of the terms childbirth, teething, etc., which are physiological functions. They can only be the predisposing conditions favorable to disease.

Some of these terms appear to have been used with diplomacy; and in some cases, no doubt, the physician is not entirely to blame. For instance, that fair young girl, the flower of a family, wasted away and died of consumption, fully recognized by the doctor. But the family probably wished to be deceived in the matter, and he gave his certificate that it was only "hectic fever." And again, the friends of the deceased would be likely to have more faith in the physician who wrote "visceral neuralgia," than if he had given the affection its common name in plain English. Then, too, a physician may have committed himself to some common-place diagnosis, and in the event of death he would give his certificate for this disorder, rather than for another which might give rise to the charge that he did not know the disease at first. Or another might give as the cause of death some disorder which is popularly considered as necessarily fatal, as cancer, consumption, etc., though the malady was really something else. These are

sources of error to be guarded against, and it is to be hoped that physicians will be more careful in this regard in the future.

Some recognized diseases and causes of death are not sufficiently differentiated in these tables and reports. One of these is infantile paralysis. The number of deaths due to this disease can only be inferred from an examination of the columns giving the ages under paralysis—not a very certain or convenient method. Hereditary syphilis and congenital jaundice are also of this class.

Though an insignificant number of deaths are attributed to “unknown” causes, it must not be inferred that the other causes given are known, or that they satisfactorily explain the determining cause of death. I have already adverted to some of these. There are conditions which rarely exist as recognized affections, but most frequently they are the culminating symptoms or expression of another disease, and should be considered a part of the mode of death. Dropsy of the lungs, heart-clot, convulsions, etc., are of this class. I might also include uræmia, a disease of comparatively recent distinction, which term is also used to designate the final symptoms of Bright's disease, etc.

In studying the mortality and the causes of death several factors are to be noted. The tables given in the reports present accurate and valuable data respecting the relations of age, sex, locality, color, nationality, etc., which do not call for extended notice in this connection. I shall, however, briefly consider the relations of births and of season.

The relations of births to deaths are particularly interesting. The increase in the population is due to the natural excess of births over deaths. This has ever been true, except during the prevalence of war, pestilence, or famine. In a dense population, however, there is a birth-rate lower than natural, and a death-rate which is greater; hence, sometimes, owing to the prevalence of some disease, or the occurrence of unusual meteorological conditions, the death-rate may exceed the birth-rate. This has been the case in Philadelphia in eight years out of the past twenty-seven. During this period the average annual birth-rate has been 24.35 to 1000 persons living, and the death-rate has been 21.84, and the average annual excess of births over deaths has been 1070. But in 1881 the deaths exceeded the births by 1361. The explanation of this increased mortality is found in the unusual prevalence of smallpox (1336 deaths) and of scarlet fever (486 deaths). Again, in 1876, when there was an excess of 197 deaths, there were four factors, each of which alone would account for this excess; a large floating population, a very hot summer (producing the great

mortality of 1173 death from cholera infantum alone), and unusual epidemics of diphtheria (709 deaths) and of smallpox (407 deaths). In 1875 there was an epidemic of scarlet fever (1032 deaths). Another epidemic of smallpox in 1871-72 (2585 deaths in the latter year) more than accounts for the small excess of deaths in 1872. Indeed, smallpox was prevalent in 1862-65, when there was an excess of deaths. But there was also a most noticeable decrease in the number of births during those years. This is to be accounted for by the absence from home of many heads of families who were engaged in the late civil war. In 1862 there was a falling off of 2530 births, about 15 per cent. as compared with 1861, though the average annual increase of births for twenty-five years is over 300. The increase in the birth-rate in 1866 is almost as marked as is the decrease in 1862. Wars not only decimate the living population, but retard the natural increase as well.

The relations of season to deaths have been briefly hinted at in connection with the great number of deaths from cholera infantum in 1876. Everybody remembers the hot summer of the centennial year. In a single week in July there were 90 deaths from sunstroke, and in that same week the total number of deaths was 864. This was probably the greatest mortality for a single week in the history of the city. Usually the greatest adult mortality occurs in March, and the greatest infant mortality in July or August. More deaths (about 55 per cent.) occur in the half year from March to August, than in the other half year from September to February (about 45 per cent.). The fewest deaths occur usually in June and November. The meteorological reports must be studied in connection with the daily, or, at most, the weekly, mortality, to be of any real value. The monthly and annual means are too constant for practical deductions.

In the Health Officer's Reports are published, on opposite pages, and convenient for reference, the weekly reports of interments and the meteorological observations for the corresponding week. The arrangement is convenient, but it is also fallacious.

First, with regard to the mortality. A weekly report of interments does not represent the mortality for a week, nor for a given period of seven days. This report "represents the number of interments during the seven days ending at 12 o'clock Saturdays," and it is made up from the certificates which are returned to the health office after burial; it includes only "persons who have actually died in the city of Philadelphia," and it must be considered as being from three to five or more days later than the current mortality. Such a report

is well enough for weekly publication in the newspapers, as it serves to keep the public apprised of the mortality so far as it can be measured by the weekly interments, but in no other sense can such a record be of any value. From a medical standpoint it is utterly misleading and untrustworthy. Why should the interments masquerade as the mortality of a great city? What relations exist between meteorological conditions and interments? If any, it concerns the undertaker, the gravedigger, and the friends of the deceased.

Second. The potential meteorological conditions must be presumed to have been acting for some hours or days preceding the occurrence of a death; and this added to the variable lapse of time before interment, tends to increase the fallacy.

Therefore, in studying these weekly reports, these facts must be kept in mind. For instance, if the meteorological report for a given week shows excessive heat or cold, or sudden changes in temperature and barometric pressure, the effects of the same on the mortality must be looked for in the following as well as in the corresponding weekly report of interments. But even then it must be greatly a matter of conjecture, owing to the variable lapse of time between deaths and interments.

But the deception does not end here. The entire system of tabulations in the reports seems to rest on this false basis of weekly interments instead of daily or weekly deaths. This is apparent in Table X., Report for 1887, where the figures given are identical with the weekly reports of interments, though this table is headed "the number of deaths in each week, etc., for the year 1887." These same figures are also used in Table XXXII., "Total weekly deaths, with meteorological reports, etc." In connection with these tables should be mentioned the two charts "exhibiting the course of the total mortality," and the "mortality from diphtheria and scarlet fever." All of these are equally misleading and fallacious, for they represent the interments and not the deaths occurring in the weekly periods. Every death certificate gives the date of death, and this should be the controlling factor in making weekly reports for statistical purposes and for comparison with the meteorological observations.

Again, these weekly reports of interments are used in preparing the monthly tables contained in the Appendix to the Health Officer's Report, and with equal disregard of accuracy. The table of "Interments during January," is made up from four weekly reports; February, four; March, five; and so on. These monthly tables are intended to

represent the actual mortality, but how fallacious it is to have the interments reported during twenty-eight days in January and thirty-five days from the 27th of February to the 2d of April, pass for the mortality of January and March, which each have thirty-one days. A summary of these tables is given in Table XXVI., "Mortality in each month, from all causes, during 1887." It will be observed that the terms mortality, deaths, and interments, are used synonymously in this report, though the basis of the whole is the interments, as I have already shown.

In Table XXXV., "Recapitulation for past twenty-seven years and six months," the total number of births is given at 411,851, though the correct total is 100,000 greater. This same error appears in this table in the report for 1886. Then it was probably a typographical error, but now it is an inexcusable clerical blunder.

In Table XIII., "Deaths in each Ward," we have the "deaths to population" estimated upon the population in 1880. It cannot be possible that the wards have the same relative populations now that they had then. The population in a ward in the older and more densely built part of the city would not naturally show the increase that would be found in a suburban ward where thousands of new houses have been erected during this same period. On this basis the death-rate would be more than 25 per 1000, which is certainly too high.

Such is the method and the fallacy in these reports for this city. So far as my inquiries have extended into the methods pursued in other cities, I have found none so faulty in these respects. If statistics are of value, they are valuable only when they are true and above a suspicion of fallacy.

The alphabetical order in which the causes of death are enumerated in these tables is also a most inconvenient arrangement. In last year's report the mortality table for the year contains 468 causes. Of course, many of these are synonymous terms, but they add to the confusion. To make the statistics of mortality valuable and readily available to the physician, the causes of death should be classified under the divisions in which diseases are grouped clinically and in the standard works. This is entirely practicable, and I have made the following classification, based upon clinical and rational association, rather than upon arbitrary rule, or pathological phenomena, or morbid processes.

CAUSES OF DEATH.

- I. General diseases.
 - A. From special morbid agents.
 - B. From derangements of nutrition.
- II. Diseases of the respiratory system.
- III. Diseases of the circulatory system.
- IV. Diseases of the nervous system.
- V. Diseases of the digestive system.
- VI. Diseases of the blood and blood-glandular system.
- VII. Diseases of the genito-urinary system.
 - A. The urinary system and male organs of generation.
 - B. The female organs of generation.
 - C. Affections depending on pregnancy.
- VIII. General surgical diseases.
 - A. Of the superficial and visceral structures.
 - B. Of the bones and joints.
- IX. General and indefinite causes.
 - A. Causes mostly relating to the extremes of life, and referring to failure of nutrition.
 - B. Causes relating to the newborn.
 - C. Prenatal causes.
- X. Accidental causes.

The need of such a classification, when making a special research, was the first suggestion of this work. The Report on the Mortality and Vital Statistics, Census of 1880, contains a classification which, in a measure, accords with my arrangement; but it represents rather the general pathological association of diseases than their clinical relations as the causes of death. The magnitude of the census statistics necessitated the condensation and grouping of the minor causes of death. In the several tables there are only about one hundred specified causes with about twenty groupings. But in our health officer's reports all the causes are enumerated, and by excluding the synonymous terms, every particular cause of death could be given in practical classification and in less space, and it would be vastly more valuable.

In illustration of this classification, I have taken the pains to tabulate the principal causes of death given in the Health Officer's Report for 1887, and for comparison I have introduced the statistics of the same reports for 1876 and 1886. For comparison with general statistics, I have introduced those of the U. S. Census Report for

1880, and in order to make these available at a glance I have reduced the number of deaths by a common multiple, so that the total number represented is about 20,000. This corresponds closely with the number of deaths occurring in this city, as shown in the adjoining column, and comparisons are obvious.

This table represents the total mortality for a year. By giving the monthly mortality in connection with it, what a graphic representation of the relations of season to deaths would be displayed. And as the number of deaths is an indirect index of the prevalence of diseases—as nearly accurate as any that can be suggested—it would also serve to show the relations of season to diseases and their causation.

This table is presented in full as an appendix to this inquiry, together with a summary of the total mortality from the diseases in the different classes.

No single classification or tabulation can represent all of the desirable features, nor present all of the valuable data. Nor will that which was considered right ten years ago represent the state of pathology and clinical distinctions ten years to come. But there is less change in the clinical association of diseases than in their pathological distinctions, and hence I think this classification exhibits special and practical features.

The progressive increase in the mortality from certain causes is illustrated in this table for this city, and also confirmed by the census statistics for the United States since 1850. The following are of this class: puerperal septicæmia, venereal diseases, cancer, tumor, diabetes, apoplexy, paralysis, mental diseases, stillbirths, malformations, pneumonia, hernia, debility, peritonitis, exposure, and neglect, etc. Allowances should be made in some instances for advanced methods of discrimination, but these would not materially lessen the percentages. Erysipelas is conspicuous as having been steadily decreasing as a cause of death during this period.

Comparing the mortality in Philadelphia in 1886 and 1887, and making allowances for the differences in population and deaths in these years, I find that there is an actual increase of over 70 per cent. in the number of deaths attributed directly to alcoholism. Comparing 1886 and 1876, the increase is only about 15 per cent. This is rather surprising, for it has been argued of recent years that the decrease in the consumption of spirituous liquors and the corresponding increase in the consumption of malt liquors was for the public good, and would lessen the evils of intemperance. But such does not appear to be the case; and on looking still further into the table I note a

very great increase in the number of deaths from diseases of the heart, inflammation of the brain, apoplexy, paralysis, cirrhosis and other affections of the liver, Bright's disease and other diseases of the kidneys, all of which have been charged to the excessive use of spirituous liquors. Evidently some fallacious conclusions have been drawn in relation to these affairs, and they need clearing up.

Considering the formidable class of diseases in the first group, depending upon epidemic, endemic, infectious, or contagious influences, the relative mortality is really quite small, and it is decreasing, owing, no doubt, to improved hygiene and sanitation, as well as to advanced methods in the treatment of these diseases. On the other hand, the diseases in the groups of the respiratory, circulatory, and nervous systems would appear to be increasing.

It will be observed that several causes of death are conspicuous on account of the larger number of deaths given in the census statistics. Some of these illustrate the more prompt attendance of physicians in the city as compared with the country, in cases where early attendance is a desideratum. Of this class may be mentioned cholera morbus, dysentery, diarrhœa, whooping-cough, tetanus, abortion, childbirth, and the class of accidental causes. And, lastly, it would appear that a man's chances of being struck by lightning are many times greater outside of Philadelphia.

SUGGESTIONS.

From this consideration of the statistics of the mortality of Philadelphia, as exhibited in the Health Officer's Annual Reports, I am led to offer the following suggestions :

First. The basis of the mortality statistics should be the date of death, and not the week of interment.

Second. These statistics should be tabulated and classified according to the causes of death and the class of diseases, and give the percentage of each cause to total mortality, as illustrated in the table herewith presented in the appendix, and should, in addition, exhibit the mortality for each month in the same table or form.

Third. All indefinite and synonymous terms should be reduced to their rightful classification, and clinical distinctions should be carefully preserved.

Fourth. To insure accurate and useful classification, physicians should be careful to state the determining cause of death in each instance and avoid indefinite statements. The death certificate should be so worded as to elicit this information.

Fifth. The classification and tabulation should be under the immediate supervision of a physician.

Sixth. The actual daily mortality should be represented in connection with the meteorological observations. This would afford a ready means of comparing the gross mortality with the data in these tables, and serve as an index to special studies.

Seventh. In connection with the mortuary statistics, it would doubtless be of "great benefit to medical science" to publish also the number of cases of contagious diseases reported to the health officer.

In conclusion, I believe that the medical profession, who furnish the principal data for these reports, have a right to expect that the statistics of mortality be published and presented in such shape that they will be valuable, convenient for reference, and not fallacious. The reforms suggested, and others which a practical physician and sanitarian would find necessary, would greatly conduce to the accuracy and value of these statistics.

NOTE.—Since the preparation of this paper my attention has been directed to a most valuable contribution, by Dr. J. S. Billings, entitled "Methods of Tabulating and Publishing Records of Deaths," published in vol. xi., *Reports of the American Public Health Association*. I refer to this well-known authority as confirming the need of reform and uniformity in this matter.

APPENDIX.

TABLE SHOWING THE MORTALITY OF PHILADELPHIA FOR THE YEARS 1876, 1886, AND 1887, WITH A COMPARISON WITH THE CENSUS OF 1880, GIVING THE CAUSES OF DEATH AND THE CLASS OF DISEASES.

Causes of death.	1876.	1880, U. S. census (reduced).	1886.	1887.	Percentage of each cause to total mortality, 1887.
Population (estimated)	829,854	.....	971,363	993,801	.....
Total deaths ¹ . . .	18,892	20,088	20,005	21,719	.....
Deaths in 1000 . . .	22.88	about 18	20.59	21.18	.....
GENERAL DISEASES.					
A. From Special Morbid Agents.					
Cerebro-spinal meningitis	84	76	75	45	0.207
Diphtheria	708	1008	411	416	1.902
Erysipelas	84	113	76	59	0.271
Influenza	11	.....	7	3	0.013
Malarial fevers	4	.....	44	38	0.174
“ “ intermittent	11	505	3	6	1.026
“ “ remittent	24	.....	17	15	0.065
Measles	53	213	19	358	1.646
Puerperal septicæmia	54	112	28	33	0.151
Pyæmia	45	.....	45	61	0.280
Septicæmia	23	42	93	69	0.317
Scarlet fever	328	433	248	159	0.731
Smallpox	407	23	4	.....	.....
Syphilis	27	30	40	53	0.243
Typhoid fever	761	604	618	621	2.856
Typhus fever	27	6	3	.....	.....
Whooping-cough	88	292	85	130	0.598
Others of this group	3	32	2	2	.....
	2742	3489	1818	2068	9.52
B. From Derangements of Nutrition.					
Diabetes mellitus	19	38	42	49	0.226
Gout	4	2	6	7	0.032
Purpura hemorrhagica	17	4	19	12	0.055
Rheumatism	31	89	20	59	0.179
Scrofula	32	115	32	31	0.143
Uræmia	57	15	126	96	0.441
Others of this group	3	.....	.....	4	0.018
	163	263	245	238	1.095
DISEASES OF THE RESPIRATORY SYSTEM.					
Abscess of lungs	15	.....	19	16	0.074
Asthma	35	45	36	40	0.184
Congestion of the lungs	208	.....	221	246	1.132
Consumption of the lungs	2672	2412	2834	2800	12.896
Croup	386	475	650	442	2.036
Dropsy of the lungs	17	.....	37	22	0.107
Emphysema	15	.....	13	22	0.107
Hemorrhage from the lungs	55	.....	71	63	0.290
Inflammation of the bronchi	354	290	441	419	1.904
“ “ lungs	1081	1666	1456	1703	7.833
“ “ larynx	49	21	63	55	0.247
“ “ pleura	10	52	26	30	0.138
Dropsy of the chest	44	.....	19	23	0.103
Empyema	16	.....	7	12	0.055
Laryngismus stridulus	10	.....	9	5	0.023
Others of this class	16	221	22	28	0.128
	4987	5182	5924	5926	27.309

¹ Not including prenatal causes.

Causes of death.	1876.	1880, U. S. census (reduced)	1886.	1887.	Percentage of each cause to total mortality, 1887.
DISEASES OF THE CIRCULATORY SYSTEM.					
Aneurism of the aorta	17	12	34	37	0.124
“ in other situations	3	...	4	6	0.027
Disease of heart	566	700	769	863	3.969
Fatty degeneration of heart	31	...	50	77	0.354
Hypertrophy of heart	71	...	73	63	0.290
Neuralgia of the heart	21	16	39	45	0.204
Rheumatism of the heart	20	...	34	20	0.093
Heart clot	21	...	33	17	0.078
Dropsy of the heart	60	...	46	50	0.233
Inflammation of the pericardium	35	...	63	52	0.239
Others of this class	20	38	16	43	0.197
	865	766	1161	1263	5.826
DISEASES OF THE BLOOD AND BLOOD-GLAN- DULAR SYSTEM.					
Anæmia	22	20	27	1	
Goitre . . . . .	...	1	5	2	
Leucocythemia	9	3	2	2	
Lymphadenoma	1	1	2	1	
Diseases of the spleen	4	5	...	2	
Others of this group	4	2	6	4	
	40	32	42	12	0.955
DISEASES OF THE NERVOUS SYSTEM.					
Abscess of the brain	12	...	12	11	
Alcoholism	37	42	79	143	
Mania-a-potu	25	...	10	19	
Apoplexy	255	255	384	479	
Hemorrhage from the brain	17	...	47	34	
Cerebral embolism	6	...	11	15	
Congestion of the brain	445	...	347	437	
Convulsions	894	472	848	983	
Dropsy of brain (hydrocephalus)	164	115	100	97	
Effusion on brain (meningitis)	76	197	60	40	
Epilepsy	34	57	27	29	
Inflammation of the brain	481	288	646	771	
Insanity	9	32	13	38	
Softening of the brain	93	...	91	89	
Tumor of the brain	5	...	16	23	
Paralysis	305	367	434	418	
Tetanus	28	46	24	28	
Inflammation of the spinal cord	14	...	14	24	
Other affections of the spinal cord	7	68	24	25	
Others of this group	47	324	18	41	
	2950	2263	3205	3744	17.25
DISEASES OF THE DIGESTIVE SYSTEM.					
Sore mouth, etc.	8	5	18	16	
“ throat, etc.	9	37	4	7	
Stricture of the œsophagus	3	2	4	5	
Hemorrhage from the stomach	5	...	12	10	
Cancer of the stomach	84	74	107	121	
Ulceration of the stomach	11	...	25	12	
Other affections of the stomach	15	94	18	13	
Inflammation of the stomach and bowels	426	340	531	740	
Cholera infantum	1173	675	688	891	
“ morbus	35	59	36	51	
Diarrhoea	149	290	137	163	
Dropsy, abdominal	38	19	18	23	
“ general	129	372	111	88	
Dysentery	78	365	70	82	
Consumption of the bowels	20	...	20	32	
Cancer of the bowels	8	10	14	5	
Hemorrhage from the bowels	17	...	18	20	
Obstruction of the bowels	31	34	38	47	
Intussusception	23	...	27	11	
Other affections of the bowels	32	55	31	32	
Hernia	28	33	28	24	
Tubes mesenterica	20	19	26	30	
Teething	28	113	28	85	

Causes of death.	1876.	1880, U. S. census (reduced).	1886.	1887.	Percentage of each cause to total mortality, 1887.
DISEASES OF THE DIGESTIVE SYSTEM (cont'd).					
Worms . . . . .	...	30	1	...	
Abscess of liver	16	...	20	17	
Cancer of liver	27	18	69	59	
Cirrhosis of liver	57	127	128	143	
Inflammation of liver	56	54	38	45	
Other affections of the liver	60	125	96	67	
Jaundice	28	35	45	27	
Inflammation of the peritoneum	128	89	231	220	
Others of this group	100	62	69	71	
	2842	3681	2706	3137	14.84
DISEASES OF THE GENITO-URINARY SYSTEM.					
<i>A. The Urinary System and Male Organs of Generation.</i>					
Bright's disease	181	145	427	370	
Inflammation of the kidneys	31	99	120	138	
Other affections of kidneys	30	...	28	12	
Inflammation of the bladder	27	...	29	32	
Other affections of bladder	5	33	11	2	
Urinary calculus . . . . .	...	19	1	5	
Retention and suppression of urine	6	4	5	8	
Stricture and rupture of urethra	1	2	6	2	
Hypertrophy of the prostate	3	...	10	4	
Others of this group	2	6	3	...	
	286	308	640	573	2.64
<i>B. The Female Organs of Generation</i>					
Inflammation of the uterus	15	14	9	9	
Hemorrhage from the uterus	36	9	18	13	
Cancer of the uterus	59	51	113	136	
Tumor of the uterus	7	4	11	2	
Cancer of the ovaries	4	1	4	4	
Tumor of the ovaries	7	10	14	9	
Others of this group	6	27	9	11	
	134	116	178	184	0.84
<i>C. Affections Depending on Pregnancy.</i>					
Abortion . . . . .	...	19	2	4	
Childbirth	4	151	18	17	
Puerperal convulsions	23	22	17	21	
Others of this class	4	9	3	6	
	31	201	40	48	0.22
GENERAL SURGICAL DISEASES.					
<i>A. Of the Superficial and Visceral Structures.</i>					
Abscess ¹	44	35	42	55	
Cancer ¹	182	199	188	180	
Carbuncle	8	5	7	6	
Gangrene	34	29	36	46	
" senile	1	...	4	8	
Tumor ¹	20	34	33	41	
Ulceration ¹	29	...	30	43	
Diseases of the skin	8	10	5	7	
Others of this class	30	2	2	14	
	357	314	347	400	1.84
<i>B. Of the Bones and Joints.</i>					
Diseases of the hip-joint	7	6	10	5	
" " spine	10	36	12	12	
Fracture of the skull	14	...	8	10	
" " thigh	11	...	8	7	
Other fractures	3	25	4	4	
Others of this class	9	17	7	7	
	54	81	49	45	0.208

¹ Excluding those classed elsewhere.

Causes of death.	1876.	1880, U. S. census (reduced)	1886.	1887.	Percentage of each cause to total mortality, 1887.
GENERAL AND INDEFINITE CAUSES.					
<i>A. Causes mostly Relating to the Extremes of Life, etc.</i>					
Asphyxia	26	...	30	35	
Coma . . . . .	...	...	1	1	
Debility	681	683	511	609	
Inanition	472	116	581	633	
Marasmus	771	140	831	954	
Old age	599	378	753	795	
Syncope	2	...	2	1	
Unknown	57	981	5	8	
	2608	2298	2704	3036	13.99
<i>B. Causes Relating to the Newborn.</i>					
Cyanosis	100	29	168	135	
Malformation	15	30	34	22	
Spina bifida	11	...	11	4	
Trismus neonatorum	22	22	19	17	
Umbilical hemorrhage	7	...	10	9	
Others of this class . . . . .	...	...	1	1	
	155	81	243	188	0.865
<i>C. Prenatal Causes.¹</i>					
Premature birth	244	183	343	476	
Stillborn	896	657	966	973	
	1140	840	1309	1449	..
ACCIDENTAL CAUSES.					
Burns and scalds	68	126	59	73	
Casualties	225	421	323	351	
Drowned	111	114	100	83	
Exposure	3	34	2	4	
Homicide	22	35	23	28	
Lightning stroke . . . . .	...	8	1	1	
Poisoning	18	53	24	18	
Shock	8	...	2	10	
" surgical	4	6	8	8	
Suffocation	15	61	47	48	
Suicide	60	67	90	88	
Sunstroke	130	15	19	127	
Wounds, gunshot	11	61	3	5	
Others of this class	3	9	4	13	
	678	1010	705	857	3.946

¹ Not included in grand total.

SUMMARY SHOWING THE TOTAL MORTALITY FROM THE DISEASES IN THE
DIFFERENT CLASSES.

Classes.	Philadel- phia, 1876.	1880, U. S. census (reduced).	Philadel- phia, 1886.	Philadel- phia, 1887.
General diseases :				
A. From special morbid agents	2742	3489	1818	2068
B. From derangements of nutrition	163	263	245	238
Diseases of the respiratory system	4987	5182	5924	5926
Diseases of the circulatory system	865	766	1161	1263
Diseases of the nervous system	2950	2263	3205	3744
Diseases of the digestive system	2842	3681	2706	3137
Diseases of the blood and blood-glandular system	40	32	40	12
Diseases of the genito-urinary system :				
A. The urinary system and male organs of gener- ation	286	308	640	573
B. The female organs of generation	134	116	178	184
C. Affections depending on pregnancy	31	201	40	48
General surgical diseases :				
A. Of the superficial and visceral structures	357	314	347	400
B. Of bones and joints	54	84	49	45
General and indefinite causes :				
A. Causes mostly relating to the extremes of life and referring to failure of nutrition	2608	2298	2704	3036
B. Causes relating to the newborn	155	81	243	188
C. Prenatal causes	1140	840	1309	1449
Accidental causes	678	1010	705	857
	20,032	20,928	21,314	23,168

